ATC Energy Collaborative – Michigan High Retirements #2 Future

Identification of Needs

Stakeholder Report

May 10, 2010

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Overview

- Goals and Objectives
- Process & Timeline
- Methodology
- Identification of Needs
- Solution Screening
- Next Steps

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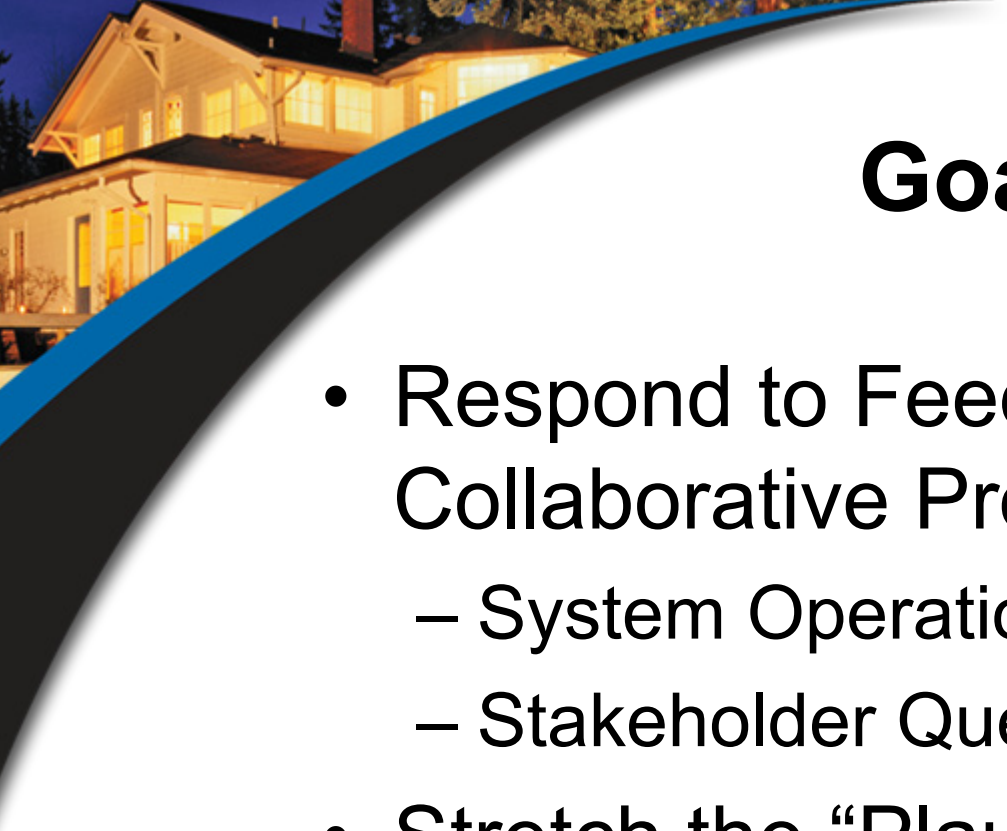

Goals and Objectives

- Respond to Feedback From the Initial Collaborative Process in 2008/09
  - System Operations Experience
  - Stakeholder Questions
- Stretch the “Plausible Bounds” we used in the High Retirements
  - Mid to Mid Upper Loads
  - Very Low UP Generation

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Process and Timeline

- January – Selected High Retirements as the best existing Future to modify
- February – Outreach to Stakeholders for Feedback in setting new Bounds
- March/April – Run Power-flow cases to find System “Needs”
- May – Stakeholder Outreach to discuss “System Needs”
- July – Potential Solutions

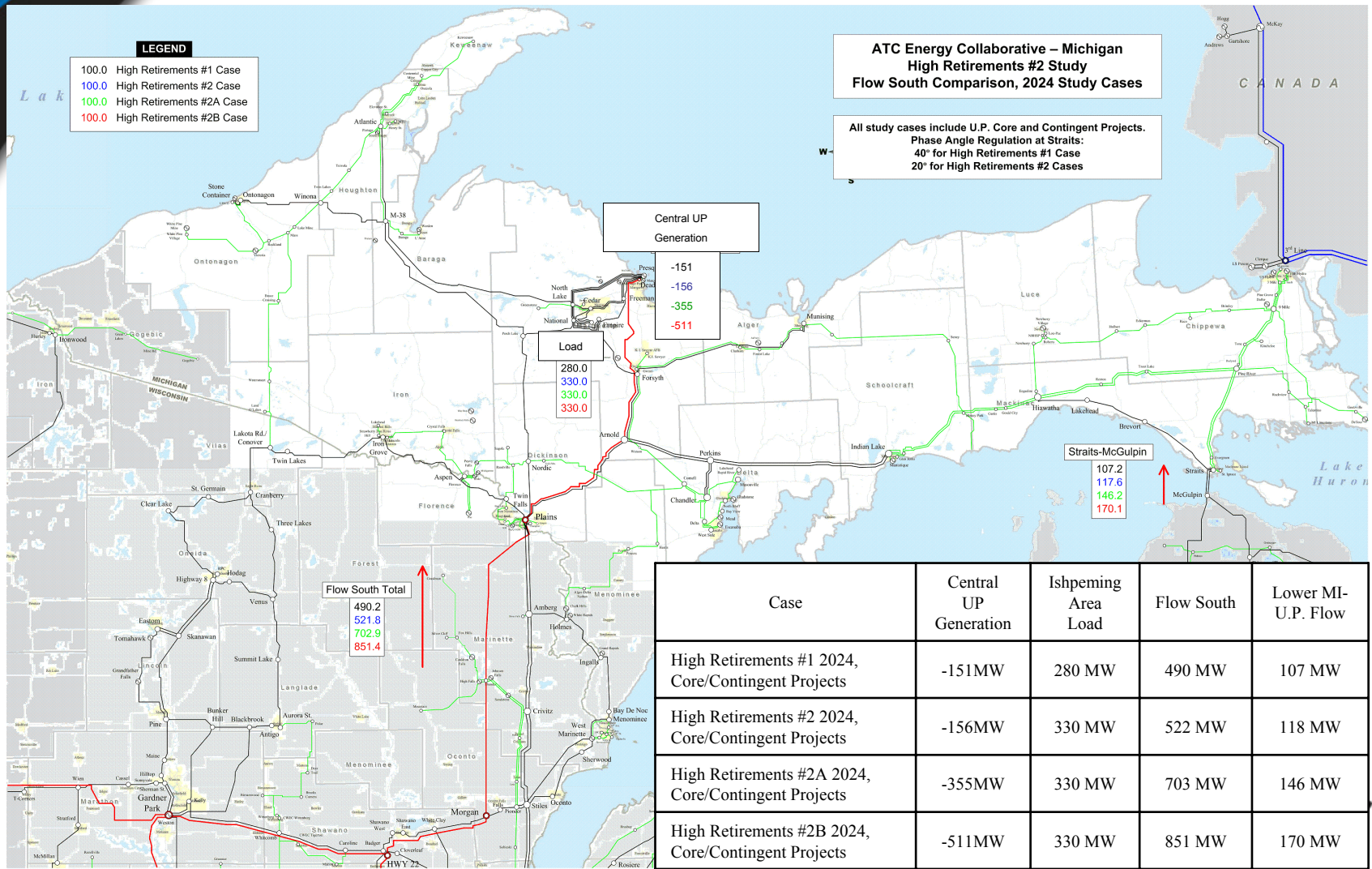
Needs Study Details High Retirements #2

- What System Needs emerge if about 500MW of traditionally available UP Generation is not dispatched?
  - To get to that answer ATC created an Intermediate “Sensitivity” with about 350MW not dispatched.
- Load is assumed to be at levels seen within the last 15 years
  - Equivalent to 1 to 1 ½ % load growth
- 2024 Study Year

Needs Study Details

- Assumed “Core” Transmission Upgrades from the Collaborative are in service
  - Key assumption is “Flow Control” in the East UP
- Inserted 150 MVar of Synchronous Condensers when 500MW of UP Generation is not Dispatched
  - Needed to get the Power-Flow case to solve
- System Needs
  - MWs of System Line Flows
  - MVars Needed to Support System voltages

System Flows for High Retirements #2



Case	Central UP Generation	Ishpeming Area Load	Flow South	Lower MI-U.P. Flow
High Retirements #1 2024, Core/Contingent Projects	-151MW	280 MW	490 MW	107 MW
High Retirements #2 2024, Core/Contingent Projects	-156MW	330 MW	522 MW	118 MW
High Retirements #2A 2024, Core/Contingent Projects	-355MW	330 MW	703 MW	146 MW
High Retirements #2B 2024, Core/Contingent Projects	-511MW	330 MW	851 MW	170 MW

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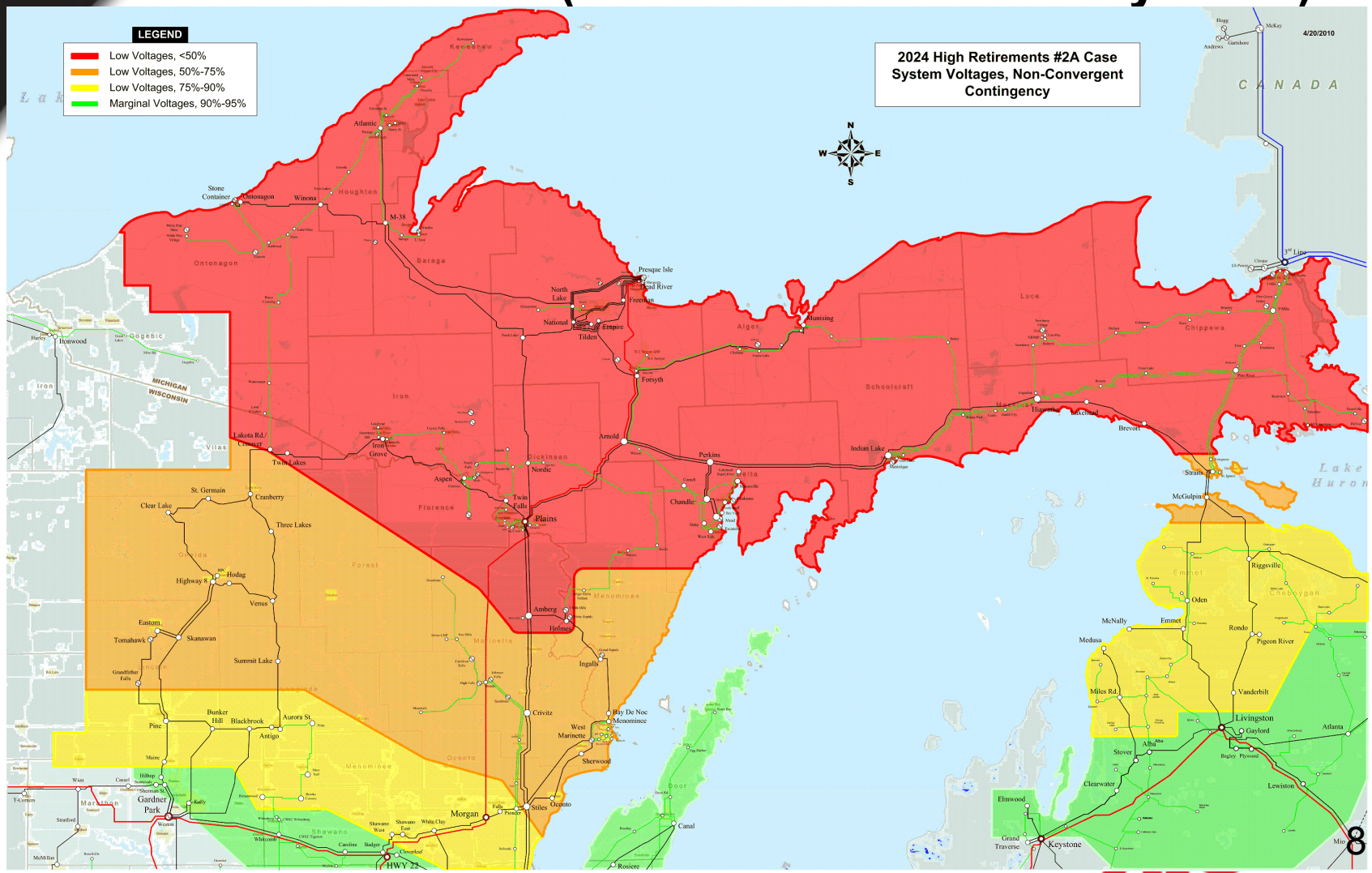
System Voltages for High Retirements #2

(Intermediate Sensitivity Case)



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Next Steps

- Review “Needs” with Stakeholders
- Solution Screening
  - Preliminary development within ATC
    - Transmission MW and MVar capabilities
  - Stakeholder involvement
    - Generation Solutions?
    - Synchronous Condenser Conversions?
    - Other Stakeholder Solution Ideas
- Determine if Solution Set Projects are Core or Contingent

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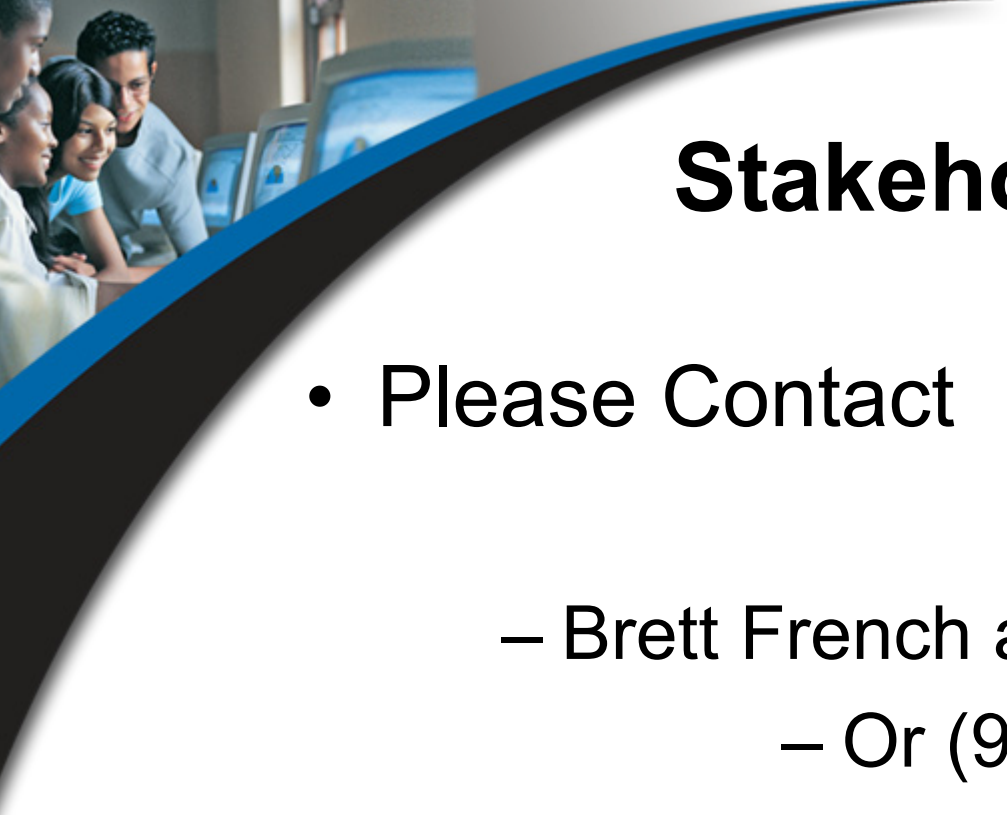

Stakeholder Participation

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Questions??

- Questions Today??